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(54) Title: NANOSCALE, CRYSTALLINE SILICON POWDER

(57) Abstract: Aggregated, crystalline silicon powder with a BET surface of more than 50 m²/g. The powder is produced by continuously feeding at least one vaporous or gaseous silane and optionally at least one vaporous or gaseous doping substance and an inert gas into a reactor and mixing the components there, wherein the proportion of silane is between 0.1 and 90 wt.% referred to the sum total of silane, doping substance and inert gas, the mixture is caused to react by input of energy, wherein a plasma is produced by the input of energy by means of electromagnetic radiation in the microwave range at a pressure of 10 to 1100 mbar, the reaction mixture is allowed to cool and the reaction product is separated in the form of a powder from gaseous substances. The powder may be used for the production of electronic components.